

Marine Protected Areas: An Overview

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Summary

There continues to be congressional interest in limiting human activity in certain areas of the marine environment, as one response to mounting evidence of declining environmental quality and populations of living resources. The purposes of proposed additional limits would be both to stem declines and to permit the rehabilitation of these environments and populations. One method of implementing this concept is for Congress to designate areas where activities would be limited, often referred to as marine protected areas (MPAs). Translating the MPA approach into a national program, however, would require that Congress resolve many economic, ecological, and social dilemmas.

The complexity of creating a program is compounded by controversy over the uses that would be allowed, curtailed, or prohibited in MPAs; the purposes of a system of MPAs; and the location, size, and distribution of MPA units. One possible way to get past some of these complexities is to think of MPA designations as a form of zoning in the ocean. Experiences related to designating MPAs in other countries also may be instructive. However, questions have arisen about the effectiveness of administration and enforcement, the benefits and costs of MPAs, and the evaluation of outcomes at some sites.

Numerous marine sites have been designated by federal and state governments for some kind of protection. Perhaps the best-known federal sites are units in the National Marine Sanctuary System. The National Marine Sanctuaries Act authorizes the Secretary of Commerce to designate areas of marine and Great Lakes environments to protect cultural and natural resources. The Bush Administration supported the MPA concept and it continued most of the Clinton Administration initiatives to coordinate protection of marine resources at designated sites, including implementing Executive Order 13158 (May 2000), which endorsed a comprehensive system of MPAs. President Bush designated the Papahānaumokuākea Marine National Monument (Northwestern Hawaiian Islands Marine National Monument) in 2006, and the Marianas Trench, Pacific Remote Islands, and Rose Atoll Marine National Monuments on January 6, 2009.

Additional actions by Congress would be needed to create an MPA system that could be characterized as integrated or comprehensive. Some issues that would likely be raised in congressional discussions include whether a comprehensive system is desired or needed; what the basic characteristics of units in any MPA system should be; how MPAs might be used to resolve use conflicts; and whether adequate funding would be authorized and appropriated to both enforce the protected status and evaluate the ecological and social impacts of MPAs. In the 110th Congress, several bills related to MPAs were introduced, including a bill to reauthorize the National Marine Sanctuary Act, but none of the legislation was enacted. In the 111th Congress, bills have been introduced to expand boundaries for the Gulf of the Farallones (CA), Cordell Bank (CA), and Thunder Bay (MI) National Marine Sanctuaries.

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Many coastal and offshore ecosystems continue to be degraded by anthropogenic causes, despite efforts to control or limit them. The causes of degradation are numerous, and can include:

- pollutants;
- runoff (carrying sediment and chemicals) from land;
- coastal development;
- introduction of non-native or invasive species;
- overfishing and bycatch;
- habitat alteration; and
- rising sea level and climate change.

The public is becoming aware of degraded marine areas because of widely publicized incidents and trends, including a large seasonal “dead zone” in the Gulf of Mexico, the environmental effects of oil spills, population declines of many popular fish species to levels that can no longer sustain commercial or even recreational harvests, and deteriorating coral reefs (reef bleaching). Current approaches to managing resources in the marine environment often appear to be ineffective because of continuing population and environmental quality declines, thus prompting a search for alternatives.

Marine protected areas (MPAs) are generally defined as areas reserved by law or other effective means to protect part or all of the enclosed environment. Some observers, often including scientists and environmental advocates, recommend designating MPAs to achieve management and conservation goals. From their perspective, the designation of MPAs is not a panacea that responds to all causes of degradation, or leads to a quick recovery for all degraded environments, but in many cases they contend that MPAs are necessary for protecting and restoring the marine environment. Policy makers are looking at how this tool has worked, alternative ways that MPAs can be designed, and whether and how MPAs might be broadly applied. Little opposition has been expressed about the overall concept of establishing MPAs, but some of the more specific discussions about which uses would be limited or prohibited have been controversial. Oil and gas development, the fishing industry, and other marine industries have consistently expressed concerns with the use of MPAs. These industries question whether the use of MPAs would afford the proper balance between conservation and economic activities.

The 110th Congress considered reauthorization of the National Marine Sanctuary Act (NMSA; 16 U.S.C. §§ 1431, et seq.) by introducing H.R. 6537 and by holding hearings, but no further action was taken. Many hold that NMSA comes closest to authorizing MPAs. It authorizes the National Oceanic and Atmospheric Administration (NOAA) to designate specific sites for comprehensive and coordinated management and conservation. However, some, especially environmentalists and many marine scientists, assert that a more comprehensive approach with stricter protection and more extensive protected areas is still needed.

This report identifies a number of issues related to establishing MPAs in the United States. It begins by defining the concept and administrative actions taken to provide spatial protection in marine areas. It then considers some of the key issues and potential benefits and costs of designating additional MPAs. It concludes by considering potential areas of congressional interest for the 111th Congress. Existing federal laws related to the use of MPAs are summarized in the **Appendix**.

The Concept of Marine Protected Areas

The term MPA has been used to characterize spatial protection of marine resources, but ambiguities exist regarding the level of protection that qualifies an area as an MPA. Protection might be considered on a continuum—from no protection to complete protection where all human activities within an area are prohibited. Those areas afforded complete protection would certainly qualify as MPAs, but areas closed to a specific use or to protect a species might not. Virtually all of U.S. waters are protected in some manner, but all U.S. waters are not considered MPAs. Often the definition depends on the context, such as the characteristics of the resources at risk and the extent of associated threats. The following section provides basic definitions of MPAs, but application of the concept is likely to evolve with improvements in scientific understanding of the marine environment and development of associated institutions.

Definition

MPAs have been defined in many ways. Definitions usually include three criteria: (1) geographically defined and bounded places; (2) approaches that manage systems rather than individual resources or species; and (3) programs that take a long-term perspective on resource management. The definition currently being used in this country, found in Section 2 of E.O. 13158 on Marine Protected Areas, defines MPAs as “any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein.”

The E.O. 13158 definition is very similar to what is probably the most widely used definition in the world, developed by the International Union for the Conservation of Nature (IUCN). It states that an MPA is “an area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment.”¹ Each designated area must be a minimum of 1,000 hectares (2,471 acres). This definition is then applied to distinct categories of areas that reflect a wide range of possible management objectives. The IUCN specifies that sites meet this definition only when at least three-quarters of a designated MPA is managed for the primary category and management of the remaining area is not in conflict. The IUCN categories are:

Category 1: *Strict Nature Reserve/Wilderness Area*, managed mainly for science or wilderness protection.

Category 1a: Strict nature reserve managed mainly for science.

Category 1b: Strict nature reserve managed mainly for wilderness protection.

Category 2: *National Park*, protected and managed mainly for ecosystem protection and recreation.

Category 3: *National Monument*, managed mainly for conservation of specific natural features.

Category 4: *Habitat Species Management Area*, managed mainly for conservation through management intervention.

¹ International Union for the Conservation of Nature and Natural Resources (IUCN), Guidelines for Protected Area Management Categories, Gland, Switzerland, 1994.

Category 5: *Protected Landscape/Seascape*, managed mainly for landscape/seascape conservation and recreation.

Category 6: *Managed Resource Protected Area*, managed mainly for the sustainable use of natural ecosystems.

As one becomes more specific about possible goals and objectives for an MPA, the question of how MPAs would be defined quickly grows complex. They could involve state and federal jurisdiction, each with different goals and responsibilities. They could emphasize either some species (perhaps the commercially most valuable or the rarest ones) over others, or the general health of the entire ecosystem over individual components. Among the questions currently receiving the most attention are: (1) would certain activities or uses be automatically prohibited at all places designated as MPAs, such as automatically closing them to all resource extractive activities, or would a list of permitted and prohibited activities be developed for each designated area or category of areas; and (2) would environmental conditions or resource uses beyond the boundaries of MPAs be managed to limit adverse effects on resources within MPAs?

Definitions are one way to convey expectations about an MPA program. For example, one could conclude that most of the Gulf of Maine is protected by an impressive web of areas designated for a variety of reasons. However, a closer examination shows that most of these designations protect a single commercial fish species or group of species or limit a specified activity. Some want MPAs to be based on a broad definition to include designations where protections are limited to a few resources or uses, while others will want it to apply only to sites where resources are strictly protected. Between these two possibilities are many intermediate approaches. This debate over definition continues because the MPA concept has been used in many different ways. Several narrower terms are being used to describe types of places that provide high levels of protection, and they also have been used with different meanings. These places might also be called MPAs, although they are often expressed as if they were alternatives to MPAs. These terms include:

- *marine reserve*, where uses that remove resources are generally prohibited (these areas may also be called ecological reserves);
- *ocean wilderness*, like the terrestrial concept for wilderness areas on federal lands where no alterations or activities that leave lasting impacts are permitted, but low-impact recreational activities may be permitted;
- *fully protected marine area*, generally a “no-take” area where a wide variety of extractive and consumptive uses/activities are prohibited;
- *national marine sanctuary*, a specific designation created in federal legislation more than 30 years ago to ensure conservation and management for areas of special national significance;
- *marine managed area*, managing for multiple objectives, where protection is not the only, and may not even be the main, objective; and
- *marine park*, similar to the terrestrial concept for a park where recreational activities are allowed and resource conservation is also a goal of the designation.

Administrative Actions

According to the MPA Center inventory, approximately 1,700 MPAs are managed by federal, state, and territorial agencies in U.S. waters.² These areas cover 34% of U.S. marine waters and vary widely in level of protection, restrictions on human uses, and overall purpose.³ Less than 30% of MPAs are managed by federal agencies, but because of the large size of several federal MPAs, nearly 85% of the total MPA area in U.S. waters is under federal jurisdiction. About 90% of MPAs permit access and multiple use, including fishing. Most are permanent, providing protection throughout the year, and most have been established since 1970. NOAA manages MPAs for fisheries management (National Marine Fisheries Service), units of the National Estuarine Research Reserve System (Coastal Programs in National Ocean Service), and the National Marine Sanctuary Program (National Ocean Service). The Department of the Interior manages marine areas that are part of the National Wildlife Refuge System (Fish and Wildlife Service), National Parks (National Park Service), and national monuments (Fish and Wildlife Service and National Park Service). A number of federal laws and programs already exist, and they have been summarized in the **Appendix**.

It is thus apparent that the protection of marine resource areas through MPAs is not a new concept, but what is relatively new is the increasing interest in developing a coordinated, nationwide system of marine protected areas. This interest has been heightened by actions initiated by the Clinton Administration and continued by the Bush Administration. This concept has diffuse roots and has been most evident among scientists and some nongovernmental organizations.

President Clinton responded to growing concerns about marine resource degradation in several ways. He issued Executive Order 13089 on coral reef protection in June 1998 (1998 was also the internationally recognized “Year of the Ocean”). In 1999 and 2000, the Administration issued action plans calling for the federal government to work with state, territorial, and nongovernmental partners to expand and strengthen MPAs throughout the United States.⁴ On May 26, 2000, President Clinton issued the Marine Protected Areas Executive Order, E.O. 13158. This order called for “strengthening and expanding the Nation’s system of marine protected areas ... throughout the marine environment ... [to] enhance the conservation of our Nation’s natural and cultural marine heritage and the ecologically and economically sustainable use of the marine environment for future generations.”⁵ More specifically, this order:

- aims to increase coordination and effectiveness of MPAs (but did not change existing MPAs or establish new MPAs);
- directs federal agencies to comply with existing regulations regarding MPAs (but did not alter existing regulations or authorities); and

² Although many of these areas have been in existence for decades, in 2007 the MPA Center completed its inventory of MPAs in the United States that was based on its MPA definition. See <http://www.mpa.gov/dataanalysis/mpainventory/>.

³ For example, less than 3% of total MPA area in the United States is no-take (prohibits fishing) or less than 1% of all U.S. waters.

⁴ The first plan, *Turning to the Sea: America’s Ocean Future*, was announced by a Cabinet-level task force created at the National Ocean Conference in 1998. It was released September 2, 1999. The second was the *National Action Plan to Preserve Coral Reefs*, prepared by the U.S. Coral Reef Task Force and released on March 2, 2000.

⁵ The order also directed the EPA to reduce pollution of beaches, coasts, and oceans by strengthening water quality protection for marine waters.

- charges NOAA and the Department of the Interior with leading federal efforts by (1) creating a list of existing MPAs in the United States; (2) creating a national MPA webpage; (3) establishing a national MPA Center to provide tools and strategies for promoting MPA effectiveness; (4) establishing an MPA Advisory Committee to provide recommendations from stakeholders outside the federal government;⁶ and (5) consulting with governmental and non-governmental stakeholders.

On December 4, 2000, President Clinton issued E.O. 13178, creating the Northwestern Hawaiian Islands (NWHI) Coral Reef Ecosystem Reserve. This reserve, encompassing about 120,000 square miles (about 77 million acres), is the largest protected area ever established in the United States. Within the overall reserve, 15 reserve preservation areas encompassing about 6,200 square miles (nearly 4 million acres, or about 5% of the reserve) were designated where all consumptive or extractive activities are limited. NOAA managed the reserve under the authority of the NMSA.

President Bush continued the initiatives started by the Clinton Administration, and has expanded on them in some cases. On June 4, 2001, after a review, Secretary of Commerce Donald L. Evans announced the retention of the Marine Protected Areas E.O. 13158. On June 15, 2006, President Bush established the Papahānaumokuākea Marine National Monument by proclamation under the Antiquities Act of 1906 (16 U.S.C. §§ 431-443) that encompasses the areas protected by the original NWHI reserve.

On September 26, 2008, President Bush amended E.O. 12962 to ensure that recreational fishing is “managed as a sustainable activity in national wildlife refuges, national parks, national monuments, national marine sanctuaries, marine protected areas, or any other relevant conservation or management areas under any Federal authority, consistent with applicable law.” According to recreational interests, this action allays their concerns of being excluded from marine protected areas.⁷

On January 6, 2009, President Bush designated three marine national monuments in the Central and Western Pacific under the Antiquities Act of 1906. The three areas include:

- the **Marianas Trench Marine National Monument** (includes the Marianas Trench, the coral reef ecosystem of the three northern most islands of the Mariana Archipelago, and a series of undersea volcanoes and thermal vents);
- the **Pacific Remote Islands Marine National Monument** (includes seven central Pacific Line Islands and adjacent waters); and
- the **Rose Atoll Marine National Monument** (the easternmost Samoan island consisting of pristine and diverse ecosystems).

The land areas of these monuments are managed as national wildlife refuges by the U.S. Fish and Wildlife Service, and the marine areas (50 miles from shore of the islands) will be managed by NOAA. The three areas total 195,274 square miles, an area larger than any existing marine protected area in the United States. Resources will be protected within the boundaries of these monuments, and scientific and recreational fishing may be permitted if consistent with the management of protected resources.

On June 12, 2009, President Obama issued a memorandum to the heads of executive departments and agencies to establish an Interagency Ocean Policy Task Force (IOPTF). The IOPTF is

⁶ A request for nominations was published at 65 *Fed. Reg.* 50503 (August 18, 2000).

⁷ “Presidential Amendment Ensures Recreational Fishing to Be Maintained on Federal Lands and Waters,” *PR Newswire* (Sept. 27, 2008).

composed of senior policy-level officials from executive departments, agencies, and offices represented on the Committee on Ocean Policy and is led by the chair of the Council on Environmental Quality (CEQ). The IOPTF was charged with developing recommendations for a national ocean policy and a framework for coastal and marine spatial planning. The IOPTF was required to provide ocean policy recommendations within 90 days and coastal and marine spatial planning recommendations within 180 days.

On July 19, 2010, the CEQ released the *Final Recommendations of the Ocean Policy Task Force*.⁸ The recommendations are divided into four main sections that focus on the following areas:

- a national policy for the ocean, the coasts, and the Great Lakes;
- a governance structure to provide sustained, high-level, and coordinated attention to ocean, coastal, and Great Lakes issues;
- a targeted implementation strategy that identifies and prioritizes nine categories for action; and
- a framework for coastal and marine spatial planning.

The coastal and marine spatial planning (CMSP) framework defines CMSP as a comprehensive, adaptive, integrated, ecosystem-based, and transparent spatial planning process based on sound science, for analyzing current and anticipated uses of ocean, coastal, and Great Lakes areas. The framework also provides national CMSP goals and guiding principles, and describes development and implementation of CMSP.

On July 19, President Obama also signed an executive order to establish a national policy for stewardship of the oceans, the coasts, and the Great Lakes.⁹ The executive order adopts the recommendations of the IOPTF to establish a National Ocean Council and provides for the development of coastal and marine spatial plans. This executive order revokes E.O. 13366, signed by President Bush in 2004. The National Ocean Council plans to hold its first meeting later this summer to begin implementing the national policy.

MPA Center Activities

In 2000, the National MPA Center was created to implement E.O. 13158 “to develop a framework for a national system of MPAs, and to provide Federal, State, territorial, tribal, and local governments with the information, technologies, and strategies to support the system.”¹⁰ In 2003, the center established a 30-member MPA Advisory Committee that has provided broad representation of marine regions, including the Great Lakes and the U.S. territories. The committee’s main purpose is to provide advice to the Secretaries of Commerce and the Interior on developing a national system of MPAs. In 2008, the center released *Framework for the National System of Marine Protected Areas of the United States of America*, which provides a set of recommendations for developing a national system of MPAs. The framework, developed after numerous workshops and advisory committee meetings, provided guiding principles, goals and objectives, and definitions for a national system.¹¹ The MPA Center is implementing the

⁸ See <http://www.whitehouse.gov/administration/eop/oceans>.

⁹ See <http://www.whitehouse.gov/administration/eop/oceans/whats-new>.

¹⁰ For information on the activities of the National MPA Center, go to <http://www.mpa.gov>.

¹¹ The framework is available at http://mpa.gov/national_system/final_framework_sup.html.

framework by soliciting nominations from current federal, state, and territorial programs to join the national system.¹²

The MPA Center has built a domestic inventory of federal, state, local, and tribal MPAs to inform the development of the national system called for in E.O. 13158.¹³ The inventory may be used to provide information for environmental assessments; to lay a foundation for objective analysis in designing a national MPA system; and to provide a centralized source of information that can be used to help protect marine resources. The inventory contains information such as management authority, for nearly 1,600 sites.

Other initiatives of the center include a virtual library and education projects to increase knowledge and awareness about MPAs. The center provides educators with materials about topics that are relevant to MPAs, such as marine habitats and fisheries, through the MPA website and workshops. It is also leading a multi-year pilot program in California, Oregon, and Washington to try to improve approaches for designing and managing a system of MPAs at a regional level.

Other MPA Management and Coordination Efforts

While the center has coordinated many aspects of the federal interest in MPAs, other federal bodies and state governments have been active in managing and coordinating activities related to MPAs. The National Park Service Ocean Park Stewardship Action Plan highlights the establishment, in partnership with NOAA, other relevant agencies, and public and private entities, of a seamless system of ocean parks, sanctuaries, refuges, and reserves. This plan also identifies actions related to mapping, enhancing protection, educating and engaging the public, and increasing the technical capacity for exploration and stewardship. These efforts are supported by a general agreement between the Department of Commerce (National Marine Sanctuary Program and Estuarine Reserves Division) and the Department of the Interior (Fish and Wildlife Service and National Park Service) to collaborate on efforts to improve management efficiencies, increase joint planning efforts, enhance public education, and improve law enforcement and rescue capabilities.

States have also been engaged in developing and using MPAs, with California being perhaps the most active. California authorities have been working to reach consensus on a comprehensive program of MPAs in state coastal waters under the 1999 Marine Life Protection Act (Assembly Bill 993). In April 2007, the California Department of Fish and Game adopted regulations to establish 29 marine reserves along the central California coast from Pigeon Point in San Mateo County to Point Conception in Santa Barbara County.¹⁴ The central coast is the first of five regions to complete the planning and implementation process. The reserves include 204 square miles or approximately 18% of state waters with 85 square miles designated as no-take marine reserves. Recreational and commercial fishing interests opposed the proposal because of the reduced harvest opportunities it imposes, while environmental interests view this as a good start to more extensive protection. Other states have also taken action. For example, Hawaii enacted legislation (Act 306 in 1998) to establish a network of marine aquarium reserves along the Kona-Kohala coast of the Island of Hawaii.

¹² See http://mpa.gov/national_system/nominating_mpas.html.

¹³ The inventory is available at http://mpa.gov/helpful_resources/inventory.html.

¹⁴ For information related to the California Marine Life Protection Act Initiative, see <http://www.dfg.ca.gov/mlpa/phase1.asp>.

Potential Benefits, Issues, and Challenges

Motivation for designating MPAs appears to be generated by the expectation that the intensity of human activities in the marine environment will continue to grow, and that this growth will exacerbate use conflicts and further degrade ecosystems. The benefit most often cited by proponents of MPAs is protection and restoration of ecosystems generally, and more specifically, valued fish populations. Additional benefits may include new educational and recreational opportunities, expanded tourism, protection of cultural resources (shipwrecks, for example), and contributions to basic science and to improved environmental conditions.

While debate about the benefits and costs of MPAs focuses most frequently on the role MPAs might play in the recovery of fish populations, they could provide other benefits.

- MPAs could be a source of baseline scientific data about current and changing conditions in the marine environment, and serve as a system so that baselines and changes could be compared among locations, particularly as climate change alters marine ecosystems. In this capacity, MPAs would provide a set of benefits not unlike one of the purposes that was articulated in legislation creating the National Estuarine Research Reserve System, a component of the federal Coastal Zone Management Program, discussed below.
- MPAs could serve as education destinations, providing opportunities for diving to observe the marine environment. Related on-shore support centers could be developed to inform a larger segment of the general public about resources protected in an MPA and the benefits that accompany the protected designation.
- MPAs could provide other environmental services, such as sequestering carbon, providing improved habitat for corals, and expanding mangroves that could dampen possible damages from hurricanes and other coastal storms.
- MPAs could protect cultural artifacts, such as shipwrecks and other places of historical significance, including places held sacred by native peoples. The first national marine sanctuary was designated to protect the site where the remains of the Civil War ironclad *Monitor* came to rest after sinking in 1862 off North Carolina.
- MPAs could become an attraction that makes them destinations for tourists and recreation activity. Activities may take place in MPAs or in nearby shore facilities, such as aquaria or museums. A unit in the National Park Service system, Buck Island Reef National Monument, with its snorkeling trail, is an example of such a place.

Commercial interests have responded that many of these benefits can be generated under current laws and programs. These interests assert that new initiatives should not duplicate other marine related legislation such as the Magnuson Stevens Fishery Conservation and Management Act (MSFCMA) or the Coastal Zone Management Act (CZMA). They also maintain that the benefits of additional protection must be weighed against the costs of constraining or prohibiting commercial activities.

Fisheries

The strongest and most vocal support of MPAs often is based on the potential role for MPAs in protecting and restoring fish populations by limiting the activities of commercial and recreational fishermen. Not only does overfishing reduce populations of desirable species, but interactions

with fishing gear can result in the mortality of nontarget species (bycatch) and degrade habitat. The benefits of MPAs identified in these studies include:

- protecting individual species and biodiversity more generally within MPA boundaries;
- managing fishery populations by controlling commercial and recreational harvest rates and protecting locations where populations congregate at critical points in their life cycles, such as spawning grounds and nursery habitats;
- reducing damage to habitat;
- protecting rare, threatened, or endangered species;
- preserving or restoring the viability of representative habitats, and
- protecting portions of larger ecosystems from over-harvesting.¹⁵

Considerable scientific and social debate continues on the potential merits of MPAs. Some of the strongest opposition to MPAs is raised by fishing interests that could be hurt by a designation. In this debate, fishing interests question whether MPAs would have unacceptable socioeconomic consequences when compared to the benefits that would be generated. An important element in this discussion of possible tradeoffs is the recognition that MPA designations can displace resource use from protected areas to nearby areas, either transferring or raising new management issues by displacing fishing effort. MPA proponents assert that some fish are likely to stray into adjacent unprotected areas where they might benefit fishermen. However, without other management actions, protecting one area may lead to overuse or excessive harvest in other areas, moving or concentrating rather than resolving the biological management issues. Among the most contentious aspects of designating and managing MPAs for fishery management are:

- deciding whether and where MPAs might be appropriate for restoring fish populations;
- deciding whether certain fishing techniques should be limited or prohibited because they capture nontarget species and damage marine habitat;
- determining how MPA protection would be integrated with other management measures both within and outside the MPA; and
- understanding the effects of MPAs on the economic, social, and cultural well-being of nearby coastal communities.

Fishing disproportionately removes larger and older fish—often because they are more highly valued by recreational and commercial fishermen, and because of regulations protect smaller and faster-growing fish to increase stock yields. Older females produce greater numbers of eggs than the same biomass of younger females because egg production is generally proportional to fish volume. For some species, larvae produced by older females are more likely to survive because older females produce eggs with a greater amount of food reserves.¹⁶ MPAs could be beneficial if fish remain in the protected area and grow to relatively larger sizes. Therefore, protected areas, such as MPAs, appear to be most beneficial to sedentary, reef-associated species or, more generally, to species which strongly associate with certain habitat features that cause these species

¹⁵ Stephan R. Palumbi, *Marine Reserves: A Tool for Ecosystem Management and Conservation*, prepared for the Pew Oceans Commission (Palo Alto, CA: Stanford Univ., 2002), 44 pp.

¹⁶ Stephen R. Palumbi, “Fisheries Science: Why Mothers Matter,” *Nature*, v. 430, (August 5, 2004), pp. 621-622.

to restrict their movement. In these situations, species would also benefit if unique habitat can be identified and protected.

For all the discussion of how protected areas would benefit fisheries, there remain large uncertainties about the effects of MPAs on the size and characteristics of fish populations and on ecosystem components more generally. Studies of MPAs show that population biomass, size of fish, density in a given area, and species diversity have increased within MPAs.¹⁷ Others counter that improvements were often inevitable because of previous management failures that resulted in extremely low population levels. Some fishery experts conclude that consistent use of traditional approaches to fisheries management, such as size limits, catch limits, or seasons, are more effective management tools than establishing places where all fishing is permanently prohibited.¹⁸

Challenges to MPA Siting and Design

Translating the concept of MPAs into an extensive system would present multiple challenges. Many of these can be documented by tracking the experiences and issues addressed both at NOAA's MPA Center and at other organizations around the world charged with MPA-related responsibilities, or by reviewing the types of controversies that have been raised when national marine sanctuaries have been proposed. An initial set of challenges centers on selection of sites. The approach to establishing MPAs often reflects the answers to several questions.

- What criteria—representative habitats, ecological integrity, social acceptability, degree of degradation, diversity of species, presence of endangered species, and so forth—should determine MPA locations, sizes, and boundaries?
- Should particular species or ecosystems be protected? If protection is based on ecosystems, can only portions be protected, both because it is almost impossible to protect an entire ecosystem in such a dynamic setting, and because migratory species move across many ecosystems?
- Should boundaries of an MPA be decided based on geographic areas or on ecosystems, which are often fragmented? If an MPA is adjacent to the coast, could it also include waterways that drain into it or associated terrestrial areas?
- Should sites that are already protected under other designations with purposes that are similar to MPAs be given a higher priority to receive an MPA designation, or a lower one since they are already protected?

These challenges represent only a fraction of potential siting issues. Many of the areas that are likely to be considered for MPAs already have had extensive human use, and effects of this use are frequently the reason for proposing designation. Proposals to designate units under the federal National Marine Sanctuaries Program have generated controversy because of opposition from interests who may have their activities curtailed. The designation process, which has lasted several years in some cases, has resulted in protracted debates among interests, or stakeholders, and some proposals have been rejected because of an inability to resolve these conflicts.

The success or failure of MPA designations is far more likely to reflect socioeconomic, cultural, and political factors than to reflect biological considerations. Perceptions are likely to be positive for stakeholders (including resource users), if designations are viewed as based on a fair,

¹⁷ PISCO (Partnership for Interdisciplinary Studies of Coastal Oceans), *The Science of Marine Reserves*, 2007, at <http://www.piscoweb.org>.

¹⁸ Dr. Robert L. Shipp, *Take Marine Protected Areas (MPAs) as a Fishing Management Tool: A Programmatic Perspective*, Report to the FishAmerica Foundation, (Alexandria, VA: 2002).

equitable, and transparent process for establishing and managing sites; clearly stated goals for the site; and expanding benefits while containing costs. In one example, a study compared a successful national marine sanctuary designation in American Samoa with an unsuccessful one in Puerto Rico, and attributed much of the difference in outcomes to the attention given to local cultural, social, and economic circumstances and institutions. One such difference was that success required retaining a local voice in management decisions.¹⁹

Marine Jurisdiction

MPAs of various sorts have been established in a range of aquatic habitats including open ocean, coastal areas, intertidal zones, estuaries, and the Great Lakes. In these areas, states and the federal government assert varying degrees of authority over activities affecting living and nonliving resources. Ownership and control also are viewed differently in marine areas, where there is little private ownership, although submerged lands, especially in nearshore areas, are sometimes leased. Generally the degree of control increases as one moves toward shore from the seaward extent of the Exclusive Economic Zone (EEZ), 200 nautical miles (nm)²⁰ from shore, to the baseline, a line that generally follows the shoreline. Governments also protect environmental quality, and lease the surface and subsurface for numerous activities, most notably oil and gas extraction. Zones or areas defined in ocean and coastal areas include state waters (shoreline to 3 nm), territorial sea (shoreline to 12 nm), contiguous zone (12 to 24 nm), exclusive economic zone (12 to 200 nm) and the high seas (beyond 200 nm).

The range of marine organisms and associated ecosystems seldom conform to these political and national boundaries. This presents management challenges when activities harmful to an MPA occur outside jurisdictional boundaries of the agency managing the MPA or when organisms move into other jurisdictions. Potential benefits of MPAs are likely to be dissipated unless agreements can harmonize protection efforts beyond MPA and jurisdictional boundaries.

Zoning

An MPA designation might not require that an entire site be administered under one set of rules. Many proponents have advocated a zoning approach, subdividing a site into subunits with different levels of protection, or protection for different purposes. Zoning would allow managing agencies to achieve multiple policy objectives. Zoning of a protected marine area to provide different levels of protection was probably first implemented by the Great Barrier Reef Marine Park Authority in Australia in the early 1980s, and has more recently been adopted elsewhere, such as the Florida Keys National Marine Sanctuary. Subdividing designated areas may be especially useful in areas where use pressures and activities are most concentrated.

The notion of zoning is well-developed on land, but there is little experience with what adjustments might be needed to apply it effectively in an aquatic environment. One reason is that this concept is at odds with the traditional view that the ocean is “free to all” and “boundless,” able to accommodate all uses in its vast expanse. This view was more widely accepted when technology to gain access to deep water resources was limited and before claims of 200-mile EEZs became an accepted international practice. National management of areas beyond the relatively narrow territorial sea is a relatively recent development and is still evolving.

¹⁹ S. J. Fiske, “Sociocultural Aspects of Establishing Marine Protected Areas,” *Ocean and Coastal Management*, v. 17, no. 1 (1992): 25-46.

²⁰ A nautical mile (nm) (6,076 feet) is equal to 1.15 statute miles (5,280 feet).

In recent years, zoning of ocean areas has been getting more attention.²¹ The goal of these efforts is to reduce spillover effects among competing uses that result in economic and environmental losses to society. This attention is a response to technological advances that permit greater access to and more intensive use of the marine environment, including the water column, ocean floor, and subsurface resources. At the same time, scientific research is developing a more accurate accounting of baseline conditions in the marine environment and effects of technologies on these conditions.

Marine spatial planning (MSP) is a concept related to land use planning in terrestrial areas. It is gaining recognition because of increases in the number and intensity of marine-related activities and degradation of the marine environment, at least in some areas. The concept grew from the use of MPAs, such as the Great Barrier Reef and the Florida Keys National Marine Sanctuary. Many observers have recommended comprehensive spatial approaches that explicitly consider ecosystems and economic and social systems, while integrating management activities across government agencies and economic sectors.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) defines MSP as:

a process of analyzing and allocating parts of three-dimensional marine spaces (or ecosystems) to specific uses or objectives, to achieve ecological, economic, and social objectives that are usually specified through a political process. MSP is place- or area-based; integrated across economic sectors and among government agencies; adaptive; strategic, participatory, and balanced.²²

Fanny Douvère, one of the primary investigators for UNESCO's MSP efforts, further defines MSP as a continuous, iterative, and adaptive process that consists of three phases: (1) planning and analysis for developing comprehensive spatial plans for the protection, enhancement, and sustainable use and development of the sea and its resources; (2) implementing MSP through regulation, incentives, and enforcement; and (3) monitoring and evaluating to assess effectiveness and the need to adapt procedures.²³ She adds that people are central to decision making and a public process is required because the use and allocation of resources are societal choices.²⁴

Other Issues

Another widely discussed issue is the desire of some to limit or prohibit offshore energy activities, including extraction and transport. This issue is highly visible, because of marine damage from oil spills around the world, often accompanied by birds or animals soaked in oil. During the 1980s and early 1990s, oil and gas development interests stressed the need to recognize multiple uses of the marine environment. They expressed concern that attempts to designate national marine sanctuaries were being used to promote a political agenda directed toward prohibiting oil and gas development in offshore areas.²⁵

²¹ Garry Russ and Dirk Zeller, "From *Mare Liberum* to *Mare Reservatum*," *Marine Policy*, v. 27 (2003): 75-78.

²² United Nations Educational, Scientific, and Cultural Organization (UNESCO), *MSP Frequently Asked Question*, April 20, 2009, http://www.unesco-ioc-marinesp.be/marine_spatial_planning_msp?PHPSESSID=53f36e370896e143c023ab31cb8438ca. Hereinafter cited as UNESCO 2009.

²³ Fanny Douvère, "The Importance of Marine Spatial Planning in Advancing Ecosystem-Based Sea Use Management," *Marine Policy*, vol. 32 (2008), pp. 762-771. Hereinafter cited as Douvère 2008.

²⁴ Douvère 2008.

²⁵ Statement of William P. DuBose, Vice President, National Ocean Industries Association, *Hearing on the Current Status and Future Needs of the National Oceanic and Atmospheric Administration's National Marine Sanctuary*

Several recent proposals to locate wind farms in offshore areas have raised the same kind of “not in my backyard” (NIMBY) responses that have been voiced for decades in response to unpopular development (e.g., landfills, prisons, and transmission towers) in suburban areas. Use conflicts are not new to marine areas, and similar responses have been raised to confront proposed offshore energy development in “frontier” areas where there is little prior history of such activity. More generally, thinking about future activities in the marine environment raises questions about how uses should be monitored, whether new categories of use can be effectively addressed through existing laws and programs (an issue raised by wind farm opponents, for example), and how public and private interests should be considered in any decision process.

National Reports

A number of recent national reports have studied and made recommendations concerning marine conservation and the potential use of MPAs. In particular, the 2003 Pew Oceans Commission Report and the 2004 U.S. Commission on Ocean Policy Report provide recommendations on ocean policy issues intended for policy makers. These reports, as well as the 2001 report on MPAs from the National Research Council, view the current piecemeal approach to marine resource management as contributing to the decline in marine environmental health. Many supporters of the MPA concept draw from these reports as they encourage Congress to replace the current approach with a more systematic and coordinated response. Many of these supporters have endorsed the Pew Oceans Commission and U.S. Commission on Ocean Policy recommendations as a starting place for policy discussions.

The 2001 NRC report on MPAs²⁶ did not make a recommendation about whether additional legislation might be desirable or whether a new law addressing MPAs is needed, although it did recognize the fragmented nature of current efforts. It discussed the costs and benefits of MPAs in comparison to more conventional management tools, explored the feasibility of implementation, and assessed the scientific basis and adequacy of techniques for the design of MPAs and marine reserves. Among its conclusions the report recommended that MPAs can be most successful if:

- all stakeholders are enlisted to participate in developing management plans;
- effective planning and design are provided; and
- integral components include regular monitoring, assessment, enforcement, and community education.

The NRC report endorsed using marine reserves as resource and fishery management tools in combination with traditional management measures. It asserted that federal and state agencies need to provide resources, expertise, and coordination for integrating individual MPAs into a framework to meet coastal and marine resource management goals established at state, regional, national, or international levels.

The Pew Oceans Commission report²⁷ calls for establishing a system of marine reserves as an important component of efforts to restore and maintain healthy marine ecosystems. These reserves would play critical roles in “zoning” areas of the ocean under sovereign control based on

Program, before the House Merchant Marine and Fisheries Subcommittees on Oceanography, Great Lakes, and Outer Continental Shelf Subcommittee and on Fisheries and Wildlife Conservation and the Environment, (Nov. 7, 1991).

²⁶ National Research Council (NRC), *Marine Protected Areas: Tools for Sustaining Ocean Ecosystems*, National Academy Press (Washington DC:2001).

²⁷ Pew Oceans Commission, *America's Living Oceans: Charting a Course for Sea Change*, The Pew Charitable Trusts, Pew Environmental Group (Philadelphia, PA:2003). The Pew Oceans Commission website and links to related reports may be accessed at http://www.pewtrusts.org/our_work_detail.aspx?id=130.

desired patterns and intensities of uses. This report also recommends establishing regional ocean ecosystems councils and a new independent federal oceans agency. The Pew Commission viewed reserves as sites that would transcend federal-state boundaries. It calls on Congress to enact a mandate to establish such a system and provide the necessary institutional structure and legal authorities to implement it. It also recommends that federal agencies should use existing authorities to establish reserves within areas that have already been designated for protection until such a mandate is enacted.

The U.S. Commission on Ocean Policy²⁸ also endorses MPAs, but its report is more wide-ranging than the Pew effort, and MPAs play a much smaller role in its recommendations. The report from the U.S. Commission on Ocean Policy may have the greatest impact on congressional considerations, since Congress created this commission in legislation and it reported to Congress and the Administration. The commission's recommendations include a reference to MPAs in the fisheries chapter that discusses coordinated management in federal waters and calls for a uniform process to designate, design, and monitor MPAs.²⁹ The commission's recommendations also include an indirect reference to MPAs related to pursuing an ecosystem approach to identify and designate "essential fish habitat" that uses current efforts to "identify important habitats and locate optimum-sized areas."

Congressional Interest

Currently, the National Marine Sanctuary Program is the closest to providing a comprehensive approach to using MPAs. Administrative action to establish national monuments in marine areas is gaining greater attention, but these actions appear to be opportunistic rather than deliberate movement to a comprehensive approach.

Legislation proposed during the 110th Congress would have made incremental progress in this direction, but not on the scale that most MPA advocates would prefer. The most direct congressional action was introduction of the Sanctuary Enhancement Act of 2008, H.R. 6537, which would have reauthorized the National Marine Sanctuary Act (NMSA). The NMSA was last reauthorized in 2000. Although funding authority for NMSA programs expired in FY2005, Congress continues to appropriate funds annually for these programs. Among the most important changes would have been elimination of constraints on designating new sanctuaries that were included in the 2000 reauthorization, clarification of the sanctuary program mission, and integration of national monuments within the system. Hearings were held by the House Natural Resources Subcommittee on Fisheries, Wildlife, and Oceans, but no further action was taken on the bill.

Several bills have been introduced in the 111th Congress to expand the boundaries of existing National Marine Sanctuaries (NMSs), to prohibit specific activities within NMSs, and to reauthorize the Northwest Straits Marine Conservation Initiative Act.³⁰ H.R. 223 and S. 212 would expand the boundaries of Gulf of the Farallones (CA), and Cordell Bank (CA) National Marine Sanctuaries. The purposes of the legislation include:

- extending the boundaries of the two sanctuaries;
- strengthening protections that apply in the sanctuaries;

²⁸ U.S. Commission on Ocean Policy, *An Ocean Blueprint for the 21st Century*, Final Report, (Washington DC:2004).

²⁹ Recommendations 19-21 and 6-3, respectively. The Oceans Commission website and links to the final report may be accessed at <http://www.oceancommission.gov/>.

³⁰ See the **Appendix** for more information on the Northwest Straits Marine Conservation Initiative Act.

- providing for public education and interpretation of the ecological value and national importance of the sanctuaries; and
- managing human uses of the sanctuaries.

H.R. 905 and S. 380 would expand the boundaries of Thunder Bay National Marine Sanctuary (MI), the only Great Lakes NMS. H.R. 790 and S. 851 would prohibit oil or natural gas development activities in any NMS or marine national monument, or on the fishing grounds of Georges Bank.³¹ H.R. 1672 and S. 668 would reauthorize the Northwest Straits Marine Conservation Initiative Act. H.R. 905 and H.R. 1672 have been passed by the House, and the Senate versions, S. 380 and S. 668, have been reported by the Senate Commerce, Science, and Transportation Committee.

Congressional consideration of new and more comprehensive approaches to protect marine areas is likely to pit economic interests, who oppose MPAs because designation would place limits on the use or extraction of ocean resources, against environmental and research interests, who would like to see more widespread or systematic protection of ocean resources. MPA advocates favor resource protection over revenue-generating activities, and believe that quick congressional action is needed to prevent further destruction or deterioration of living marine resources. MPA opponents respond that the benefits of such designations are far from proven, but limitations on commercial activities are almost certain to be costly. New industries such as aquaculture and alternative energy may be especially difficult to establish if environmental interests believe they threaten marine resources. One of the main challenges for policy makers is to balance the needs for profitable private commercial activities with public concerns related to environmental quality. It is still an open question as to whether more extensive use of MPAs will assist in achieving this balance.

³¹ Georges Bank, located off the coast of New England, is one of the richest fishing grounds in the United States.

Appendix. Current Federal Laws and Programs

No current federal laws and programs protect marine areas as comprehensively as many of the proponents of MPAs envision for this concept. Others, especially commercial interests, counter that MPAs should be reserved for truly special areas and that current federal laws are sufficient for this purpose. Regardless, it appears that most of these laws could play significant roles if a more comprehensive effort is implemented. This discussion does not include state laws and programs, which vary widely, and would become important for MPAs that include nearshore areas or have some interaction with activities in areas under state jurisdiction.

The following laws allow designation of protected areas in the marine environment. Most apply to coastal sites, but they were enacted for different purposes and take different approaches.³² If Congress chooses to authorize an MPA system, it might conclude that one or some combination of these programs can provide the basis for such a system, or it might conclude that it should enact entirely new authorizing legislation.

National Marine Sanctuaries Act (NMSA)

The NMSA (16 U.S.C. §§ 1431, et seq.) comes closest to authorizing what many proponents envision as MPAs. It authorizes NOAA to designate specific sites for comprehensive and coordinated management and conservation. The broad NMSA mandate allows NOAA to designate areas to preserve or restore conservation, ecological, aesthetic, or recreational values of the designated areas. It requires the development and implementation of management plans, which serve as the basis for prohibiting or limiting incompatible activities.³³

NOAA has designated 13 sanctuaries, ranging in size from less than a square nautical mile to more than 100,000 square miles. Each site was designated for a specific reason, ranging from protecting cultural artifacts to protecting entire ecosystems. At most of these sites, particularly contentious questions when developing or amending management plans have centered on which activities are incompatible with the purposes of the designation, and how incompatible activities will be limited. Since the management plans and regulations have been developed individually for each sanctuary and each sanctuary was established for a specified reason, they vary widely in how uses are managed and what uses are permitted. The Florida Keys Sanctuary is cited as one location where the MPA concept is being applied. Within this sanctuary, 24 sites amounting to 6% of the total area have been fully protected where harvesting marine life is greatly restricted. However, this is an exception, as few of the existing sanctuaries restrict fishing, shipping, or recreation, although most prohibit oil and gas exploration and development. This has led some to characterize sanctuaries as multiple-use areas rather than areas where uses that may damage the marine environment are prohibited.

Fishing can be regulated in sanctuaries, although this has rarely occurred. In considering whether to regulate fishing, the NMSA provides the appropriate Regional Fishery Management Council the opportunity to determine whether sanctuary fishing regulations are needed and to draft fishing regulations. The Secretary of Commerce must accept the Council's proposals or determinations unless they fail to fulfill the purpose and policies of the Magnuson-Stevens Fishery Conservation

³² For a more detailed review of current federal programs and laws, see National Research Council, "Chapter 8: Historical Background and Evaluation of Marine Protected Areas in the United States," *Marine Protected Areas Tools for Sustaining Ocean Ecosystems* (Washington DC: National Academy Press, 2001), pp. 145-173.

³³ For a detailed review of the legislative history of the NMSA, see William L. Chandler and Hannah Gillelan, "The History and Evolution of the National Marine Sanctuaries Act," *Environmental Law Reporter*, no. 34 (2004): 10506-10565.

and Management Act (discussed below). Regional Councils have supported only a few areas that have been closed to all fishing. As sanctuaries revise and update their management plans, whether and how to limit fishing is likely to receive more attention. In this setting, some MPA proponents do not view the sanctuary system, as it currently exists, as an effective approach for fish recovery efforts.

Coastal Zone Management Act (CZMA)

The CZMA (16 U.S.C. §§ 1451, et seq.) established a coastal zone management program and an estuarine sanctuary program, now called the National Estuarine Research Reserve System, and made 35 coastal and Great Lakes states and territories eligible to participate. The coastal zone management program provides grants to these states and territories to develop and implement plans that address several broad categories of development and resource protection activities in a state's coastal zone. Incentives to participate also include a consistency provision that requires federal actions in or affecting the coastal zone to be consistent with the state's federally approved plans. These incentives appear to be sufficient, as only one of the 35 eligible states and territories, Illinois, has not participated in the national coastal zone management program.

Places included in MPA inventories are concentrated in coastal and nearshore waters. These areas are among the most productive and diverse marine environments and are sites of the most concentrated and intensive uses and alterations. Therefore, protection efforts (including efforts to designate MPAs) also have been concentrated in these areas. Almost all coastal states have been addressing the pressures in or affecting state waters for many years, generally using their federally approved and funded coastal zone programs. A few states emphasize the marine side of their coastal zone, as management of ocean resources is one of the eight purposes for which states can receive "enhancement grants" under this program. However, most state coastal management programs generally concentrate their efforts on the land and shore side of the coastal interface.

Protecting marine areas can be addressed by states using coastal zone enhancement grants. These grants are available to participating states and territories that are successfully implementing programs and wish to do more. These grants are available for nine program areas, one of which is "planning for the use of ocean resources." NOAA reviewed activities under this program for 1992 through 1996, and found a majority of states had some level of activity.³⁴ However, the organization of this study's findings makes it difficult to determine how designation and management of protected areas in state waters fit into the coastal zone management activities of these states.

The National Estuarine Research Reserve System is a component of the federal coastal zone management program. States identify research reserve sites in state waters and, after federal approval, manage them. States with research reserves have integrated them into their coastal management efforts, although the research reserves do not play identical roles. The 27 National Estuarine Research Reserves that have been designated were federally approved, in part because they each represent one of the diverse estuarine ecosystems of the marine coast (including the Great Lakes).

The system is viewed as both providing a laboratory for research and education programs, and creating a network that permits research for comparing biological or other characteristics across units of the system. Incompatible uses that would compromise the value of research reserves,

³⁴ U.S. Dept. of Commerce, NOAA, Office of Ocean and Coastal Resource Management, Coastal Programs Division, *State Enhancement Grant Assessments and Strategies: Ocean Governance*, NOS/OCRM/CPD 990-08, (Washington, DC: Oct. 1999), 63 p.

such as more intensive development along the shore or major navigational improvements in the waters, are controlled or prohibited. Each research reserve operates under a management plan. The research reserves range in size from 571 acres to 365,000 acres.

Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA)

The MSFCMA (16 U.S.C. §§ 1801, et seq.) established federal fishery management authority in a zone extending from the outer boundary of state coastal waters to 200 miles from the U.S. coastline. In 1976, the Fishery Conservation and Management Act³⁵ established eight Regional Fishery Management Councils to develop management plans for those fisheries that require active federal management. The fishery conservation zone was superseded by President Reagan's declaration of an Exclusive Economic Zone (EEZ) in March 1983 (Presidential Proclamation 5030). The EEZ applies to a broad range of resources and uses. In 1996 amendments to the act, Congress authorized the Councils to designate and manage essential fish habitat. It included the authority to regulate fishing effort up to and including closing areas to protect significant spawning and rearing habitats.³⁶ Such closures, which are often a response to overfishing, may be of limited duration or permanent, and they may affect some or all fishing covered by federally approved fishery management plans. Closures are usually imposed by the National Marine Fisheries Service (NMFS) on the recommendation of a Regional Fishery Management Council. Since the overarching purpose of the MSFCMA is to promote sustainable commercial and recreational use of renewable fishery resources, permanent and complete area closures remain uncommon.

Implementation of MPAs as an element of fishery management seems to be gaining interest among the Regional Fishery Management Councils. With the growing recognition that selective protection of unique habitats can benefit multiple species, Regional Councils are beginning to consider and create longer-term marine reserves (for examples, see "Recent Administrative Actions,") in lieu of temporary fishery closures for individual species or other gear or quota reductions. Partial closures, which might limit gear used, amount of fishing effort allowed, or times when fishing is allowed, are also becoming more common.

For example, the New England Regional Fishery Management Council and NMFS established closed areas on Georges Bank and adjacent areas off New England where all fishing is prohibited to foster groundfish recovery. The North Pacific Fishery Management Council has designated a marine reserve in Southeast Alaska,³⁷ an Aleutian Islands Habitat Conservation Area, Aleutian Islands Coral Habitat Protection Areas, Alaska Seamount Habitat Protection Areas, a Bowers Ridge Habitat Conservation Zone, Gulf of Alaska Coral Habitat Protection Areas, and Gulf of Alaska Slope Habitat Conservation Areas.³⁸

The effectiveness of fishery controls, as measured by changes in fish populations, like the effectiveness of other MPA controls, has generated controversy among competing community stakeholders. With requirements in the MSFCMA for (1) recovery schedules for overfished stocks, (2) harvest of fish at sustainable levels, and (3) minimal bycatch of fish, birds, turtles, and

³⁵ The name was changed to the MFCMA and later to the MSFCMA in recognition of the contributions of Senators Warren Magnuson and Ted Stevens to federal fisheries management.

³⁶ Similar closures occur in state coastal waters under the authority of various state laws and interstate compacts as well as internationally under the authority of negotiated conventions and agreements.

³⁷ 65 *Fed. Reg.* 67305 (November 9, 2000).

³⁸ 71 *Fed. Reg.* 36694 (June 28, 2006).

marine mammals, the management of U.S. marine fisheries has become significantly more restrictive since 1996. Some critics of MPAs believe that these changes in the MSFCMA reduce the need for MPAs as a fishery management tool. In 2006, the 109th Congress reauthorized the MSFCMA and included provisions to increase protection of deep sea corals as well as to provide greater emphasis on managing marine ecosystems as opposed to individual commercially valued species.

The Wilderness Act

This law (16 U.S.C. §1131, et seq.) established the National Wilderness Preservation System of congressionally designated areas of federally owned land where many activities are restricted or prohibited to minimize human alterations. Although the extension of this act's authority into marine waters is questioned by those who envision the ocean as common property, marine areas under federal jurisdiction beyond state boundaries but within 200 miles of the coastline could be eligible for designation as "wilderness" by Congress, although none has been designated to date.

Goals of the Wilderness Act are to allow unfettered operation of natural processes and provide for only those human uses, such as primitive recreational activities, that do not affect those processes. The act generally prohibits commercial activities, permanent facilities, and use of motorized equipment or motorboats, landing of aircraft, unless the use had become established before the area was designated. However, Congress has also authorized activities that do not conform with these general prohibitions. For example, the act allows for commercial uses when they are necessary "for realizing the recreational or other wilderness purposes of the area;" the use of motorboats may be authorized where such use is already established, subject to "desirable" restrictions.³⁹

The prospects of establishing "marine wilderness" are being increasingly explored. Some interests who want the strongest possible protections in designated marine areas view this law as creating a model for the levels and kinds of protections that should be placed in MPAs, even if the law itself may not be readily transferred to marine areas for other reasons.⁴⁰ A portion of these interests believe that the wilderness designation should be a starting point because too many incompatible uses are still allowed. Others counter that wilderness designations are too restrictive. Many of the terrestrial wilderness debates have focused on whether the Wilderness Act's allowances for recreation, boating, or commercial use will be incompatible with protections that proponents seek through a wilderness designation.⁴¹ If this concept is considered for marine areas, similar debates can be anticipated.

National Park Service Organic Act

This law (16 U.S.C. §§ 1, 2-4) created the National Park Service (NPS) to administer units of the National Park System, to preserve the lands and resources unimpaired, and to foster public use and enjoyment. Each unit has its own management structure; individual laws creating most of the units have placed limits on specified incompatible uses. A total of 39 NPS units in coastal areas have significant marine components. Many of these units are classified as National Seashores.

³⁹ See CRS Report RL33827, *Wilderness Laws: Permitted and Prohibited Uses*, by Ross W. Gorte.

⁴⁰ Marine Wilderness Committee, Report on the Concept of Marine Wilderness, AFS Policy Statement #18, See http://www.fisheries.org/afs/docs/policy_18f.pdf.

⁴¹ Marine Sciences Research Center, *First Regional Marine Wilderness Areas Workshop*, Stony Brook University, (Stony Brook, NY: Nov. 2001), p.40. See <http://www.somas.stonybrook.edu/news/MWW1/proceedings.pdf>.

Many National Park units permit recreational fishing, and a few even allow commercial fishing.⁴² The Park Service's dual mandate of preservation and public use and enjoyment has resulted in conflict between interest groups who debate the desirability of providing greater access and visitor facilities versus higher levels of protection.

National Wildlife Refuge Administration Act

This law (16 U.S.C. § 668dd) establishes the primary purpose of units of the National Wildlife Refuge System to be the conservation of fish and wildlife and their habitats, and allows other compatible uses if such uses are determined to be consistent with refuge goals. The refuges are administered by the Fish and Wildlife Service in the Department of the Interior. Recreational fishing, hunting, wildlife observation, environmental education and interpretation, and nature photography are priority public uses and are allowed on many refuges; and oil and gas extraction occurs on a few units. More than 140 refuges are located along the nation's coasts, and some include offshore areas. Important functions for refuges in marine areas are managing ecosystems and providing habitat for endangered species and migratory birds as well as nursery areas that support key components of coastal and marine ecosystems. However, many regard refuge system jurisdiction as limited in the marine environment.⁴³

Antiquities Act of 1906

This law (16 U.S.C. §§ 431-443) allows the President to proclaim locations of scientific or historical interest as national monuments and has been used for several marine areas.⁴⁴ Some have argued that the 1906 Antiquities Act should be used to designate protected areas in the marine environment because it can be used expeditiously. Yet it appears that applying the Antiquities Act to marine areas will still require "negotiation, education, and consensus-building" including congressional funding commitments and involvement of local committees representing interested and affected parties.⁴⁵ Use of the Antiquities Act would likely raise the same type of objections that have been voiced over other unilateral actions without the opportunity for public input and debate.⁴⁶ In the Papahānaumokuākea Marine National Monument (Northwestern Hawaiian Islands Marine Monument) case, it is likely designation was made easier because the public had already been involved during earlier consideration of the area as a national marine sanctuary.⁴⁷

Northwest Straits (NS) Marine Conservation Initiative Act

This law (Title IV of P.L. 105-384) established the Northwest Straits Advisory Commission, and authorized the Secretary of Commerce to provide assistance to be used in accordance with the Northwest Straits Citizen's Advisory Commission Report of August 20, 1998. The NS are the

⁴² In one of these areas, Glacier Bay National Park and Preserve, Alaska, commercial fishing is currently being phased-out.

⁴³ A Department of Justice report of September 15, 2000, by Randolph D. Moss, Assistant Attorney General, concluded: "We are unconvinced, however, that the President would have the authority to establish a national wildlife refuge in either the territorial sea or the EEZ...."

⁴⁴ 16 U.S.C. §§ 431-433.

⁴⁵ Jeff Brax, "Zoning the Ocean: Using the National Marine Sanctuaries Act and the Antiquities Act to Establish Marine Protection Areas and Marine Reserves in America," *Ecology Law Quarterly*, v. 29 (2002): 71-129.

⁴⁶ See CRS Report RS20902, *National Monument Issues*, by Carol Hardy Vincent.

⁴⁷ The proclamation establishing the Papahānaumokuākea Marine National Monument can be found at <http://www.whitehouse.gov/news/releases/2006/06/print/20060615-18.html>.

waters of northern Puget Sound and southern Georgia Strait in Washington State. The priorities of the Commission are to: (1) collect marine resources data in the NS; (2) coordinate federal, state, and local marine resource protection and restoration activities in the NS; and (3) carry out other activities identified in the Report as important to such protection and restoration. Under this authority, seven county Marine Resource Committees are advising the Commission in carrying out these priorities. The 2004 program evaluation found that the initiative has generated local support of projects and conservation, increased voluntary compliance with conservation goals, brought people together to work cooperatively and exchange innovative ideas on issues, and created a model of marine governance that may be adapted to other regions.⁴⁸ Legislation to reauthorize the act has been introduced in both the House and the Senate. H.R. 1672 has been passed by the House, and the Senate version, S. 668, has been reported by the Senate Commerce, Science, and Transportation Committee.

Other Protection Efforts

Many other federal laws affect the quality of the marine environment by regulating coastal and offshore activities. These laws typically set minimum environmental quality standards or protect certain elements of the marine environment rather than designate areas for use or protection. Particularly noteworthy laws in this group include the Endangered Species Act, the Clean Water Act, and the Marine Mammal Protection Act.

Certain offshore areas in federal waters were protected specifically from oil and gas development activities for over two decades. Starting with the FY1982 Interior appropriations act (P.L. 97-100), Congress annually prohibited these activities in certain areas, including waters off New England, the Mid-Atlantic states, portions of Alaska and California, the Pacific Northwest, and the Eastern Gulf of Mexico. In 1990, President Bush issued a directive limiting Outer Continental Shelf (OCS) activities to federal waters off Texas, Louisiana, Alabama, and portions of Alaska. In 1998, President Clinton extended this moratorium to OCS activities in other areas through 2012. The 109th Congress enacted the Gulf of Mexico Energy Security Act of 2006 (Division C, Title I, of P.L. 109-432), which opened up a portion of the Eastern Gulf of Mexico that had previously been closed. On July 14, 2008, President Bush lifted the executive ban on OCS activities. Congress then allowed the ban on drilling in areas of the OCS to expire by not including the moratorium in the Consolidated Security, Disaster Assistance, and Continuing Appropriations Act, 2009 (P.L. 110-329) that was signed by the President on September 30, 2008.⁴⁹

In addition to the federal laws with authority over MPA designation and management, state and local laws as well as numerous international agreements and conventions have marine protection components. According to the MPA Center inventory, nearly 1,300 MPAs are managed by states and territories.

⁴⁸ See <http://www.nwstraits.org/PageID/181/default.aspx>.

⁴⁹ See CRS Report RL33493, *Outer Continental Shelf: Debate Over Oil and Gas Leasing and Revenue Sharing*, by Marc Humphries.

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